

COMPUTERS & HACKING

CREDITS

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Fuzion™ roleplaying rules written by David Ackerman-Gray, Ray Greer, George MacDonald, Steve Peterson, Mike Pondsmith, Benjamin Wright. ©1997 The Fuzion Labs Group™

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INTRODUCTION

Computers are a ubiquitous part of modern life—in the home, in the school, in the workplace, and with us on the go. Moreover, these computers regularly connect to other computers across the globe, on social media sites, online shopping, video conferences, etc., creating a giant network where information is being passed back and forth every second of every day. Of course, with all this information, there are those that will try to exploit this connectivity for their own purposes, whether it's for piracy, phishing, cyber-stalking, hacktivism, corporate espionage, or cyber-terrorism.

Herein is a complete set of equipment, Skills and rules for adding computer hardware and software, software programming, and computer intrusion, security cracking and digital espionage to your Fuzion-powered campaigns. This plug-in is designed to be generic and flexible enough for modern, near-future or even far-future settings, and fits well into any high-tech crime thriller, espionage, cyberpunk and even some military campaigns.

GETTING INTO ACTION

The addition of computers, and computer hardware and software brings with it entirely new options from mundane computer use to computer combat. This section details how computers and their use fit into the Fuzion™ rules.

TURNS & INITIATIVE

Computers don't normally do things of their own volition, however, it's not uncommon for computers to run programs with automated subroutines that respond to specific conditions (such as outside interference)—and that's not even considering computers with an AI. In such cases, computers use their POW to determine the Initiative in lieu of DEX.

Characters using a computer and taking action against a computer or another user on a computer add their computer's Interface Bonus to their DEX to determine their turn order.

COMPUTERS & HACKING: COMPUTERS & HACKING: GETTING INTO ACTION

RESOLVING ACTIONS

When using a computer to perform a Skill (such as *Computers*, *Hacking*, *Programming*, or *Research*), you use your character's Characteristic + Skill + Die Roll, as normal. In addition, this roll is modified by the Interface Bonus (if any) of the computer the character is using.

Computers, on the other hand do not have actual Skills (unless they are also an AI), thus they use their $\text{POW} \times 2 + \text{Die Roll}$ whenever they're called upon to make a Skill Roll. When defending against a Skill Roll, a computer's Base DV is equal to its $\text{POW} \times 2$.

SKILLS

These rules assume the use of the following Skills:

Computers: Knowledge of using computers and computer programs in most everyday applications, as well as general knowledge of system architecture. [INT]

Hacking: The skill of electronic intrusion into computer systems, including illegal entry, manipulation, and the use of viruses, trojans and worms to maximum efficiency. Also includes the skill to protect computer systems from hacking, find evidence of hacking, viruses, trojans and worms. [INT]

Programming: The skill of coding, re-tooling, and compiling computer programs (including malware). [INT]

Research: The skill in using libraries, databases, records, as well as uncovering information from obscure or uncommon sources. [INT]

COMPUTER RELATED ACTIONS

The following section details the various Actions that you can perform using a computer (or a computer can perform on its own). Many of these Actions require you to first have access to the computer in question, whether physically or through a network, and whether authorized or unauthorized (see the Infiltrate Action, below). Note that most computers have software that allows them to detect and respond to intrusion automatically (typically tracing, and counter-infiltrating the intruder in order to deny the intruder access, upload a virus or spyware, deleting all the data on the intruder's computer, etc.)... No one said this was going to be easy.

Boot/Shut Down:

This Action allows you to either start up or turn off a computer. Booting up/shutting down takes 1 Phase. Switching off a computer's power (not letting it shut down normally) is a Free Action, but may cause (on a roll of 1 on a 1D6) the computer's OS to become corrupt or otherwise behave badly the next time the computer is booted (see sidebar).

Browse/View:

Use this Action to either browse the contents of a computer or network or to view the contents of a data file. Viewing a file to find specific content takes 2D6 Phases, browsing a computer for specific content takes 2D6 Phases for every 10 SU of the computer's storage device. Attempting to locate a specific file or content within a file in this manner requires a *Research* Roll opposed by the computer.

Log On/Off:

This Action allows you to connect to a network or to directly interface with another computer. Logging onto a network that you do not have authorized access to requires a *Hacking* Roll versus a DV set by the network's Security Level (see sidebar). See the Infiltrate Action to log onto a computer that you do not have authorized access. Logging off from a network or system is a Free Action.

Additionally, you use this Action to mask your initial logon location from being traced by routing through additional servers (proxies, gates, shells, etc.). Each additional connection requires an Action to log onto and the appropriate *Hacking* Roll, but grants a cumulative +2 to your *Hacking* Roll when attempting to avoid being traced for each relay point beyond your initial connection. **Note:** This bonus is reduced appropriately for each connection that has successfully been traced.

Optional Rule: For every five relay points your connection is bounced through, you suffer a -1 to all computer related Skill Rolls, and transfer times (copying, deleting, uploading, etc.) are increased by 1D6 Phases due to lag in the connection.

Use this Action to either copy or move data to another section of the computer or to copy to a local removable storage medium. It takes 1D6

NETWORK SECURITY LEVEL

TYPE	BASE DV
Typical Home User	4
Small Business	8
Large Business	12
Corporation	16
Mega-Corporation	20
Military/Government	24
Illuminati	28

WHAT'S A BASE DV?

The Fuzion™ rules provide two options for rolling dice—one, the Interlock option, uses a 1D10 for task resolution, while the other, the HERO option, uses 3D6. To accommodate both options, which provide a very different range of numbers, the Difficulty Values in this Plug-In use an unmodified "Base DV" to which a static number or die roll is then added. To determine the "real" DV to roll against, for the Interlock option, add 5 (or a roll of 1D10) to the Base DV. For the HERO option, add 10 to the Base DV.

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Detect Intrusion:	Phases for every 10 SU of data to be copied or moved. This Action allows you to detect the presence of hackers, viruses or other threats to the computer's security. This requires a <i>Computers Roll</i> opposed by the hacker's <i>Hacking Roll</i> .
Download/Upload:	This Action allows you to either download a copy of data onto your computer or upload a copy from your computer onto another computer. It takes 2D6 Phases for every 10 SU of data to be downloaded or uploaded.
Edit/Delete:	Use this Action to either delete data from a computer or to edit the contents of a data file. It takes 1D6 Phases for every 10 SU of data to be edited or deleted.
Infiltrate:	Use this Action to gain unauthorized access to computers. This requires a <i>Hacking Roll</i> opposed by the computer. Each successful roll reduces the defending computer's Firewall by one point. A failed attempt allows the defending computer to make a Detect Intrusion attempt as a Free Action. Only once a computer's FW is 0 can it be accessed and affected by an unauthorized user or computer, leaving it open to other Actions, such as Browse/View, Copy/Move, Download/Upload, Edit/Delete, Search, Trace, and many uses of Use Program.
Load/Quit Program:	Use this Action to load a program into resident memory. A program requires a number of Resources equal to its Resource Size in order to function, otherwise the program will not load. You can have multiple programs running simultaneously, but they require a number of Resources equal to the combined Resource Size. Once a program has been loaded, it may be used normally. Quitting, or terminating a program from resident memory, is a Free Action.
Search:	This Action allows you to search for specific files or files containing specific key words. Searching a file takes 1D6 Phases, while searching a computer takes 1D6 Phases for every 10 SU of the computer's storage device. Searching requires a <i>Research Roll</i> opposed by the computer.
Trace:	This Action allows you to track a hacker back to his actual physical location by tracing his network connection. This requires an Action and an opposed <i>Hacking Roll</i> for each server that the hacker has connected to.
Use Program:	This Action allows you to use a program to perform a specific function not covered by another Action (such as attacking with an Anti-Personnel or Anti-System program), or to instruct an automated program to perform such a function on repeated Phases.

HARDWARE

Computers come with the essential hardware components and software necessary for everyday use. This generally includes the CPU, input and output devices, fixed and removable data storage devices, a network connection, operating system and a basic bundle of software applications. The exact nature of these components depends on the type of computer (laptop, desktop, etc.), the Tech Level of the setting and the computer's POW Characteristic.

COMPUTERS

Computers come in several basic sizes and formats, each intended to fulfill a different role. Each category of computer determines its cost and capabilities.

Computer; AI Megacomputer: These complex systems are advanced supercomputers capable of taking up several rooms with their multiple CPUs and arrays of external data drives. The purpose of all this hardware is to house and run a self-aware Artificial Intelligence. Though AI "megacomputers" generally have access terminals, these are primarily used for monitoring functions and performing manual diagnostics. Due to their expense, high energy demand, and large footprint, AI computers are used solely by national and international government agencies and militaries, mega-corporations, and other, ridiculously wealthy and powerful organizations.

AI megacomputers have a POW Characteristic of 12, are capable of performing 10 (15, if

COMPUTERS BEHAVING BADLY

Sometimes bad things happen to good computers—this generally ranges from an emergency power off, to being physically dropped or otherwise stressfully manhandled, to being infected with malware. Anytime a computer is subjected to such a woeful event, roll 2D6 and consult the table below.

2D6	MALFUNCTION
2	Corrupted Data: Some or all data on the computer was improperly saved or partially overwritten. There's a 1-2 chance on a 1D6 that any particular piece of data the user is trying to retrieve is unrecoverable. The user can attempt a Heroic (Base DV 12) <i>Computers Roll</i> to successfully retrieve a piece of corrupted data.
3	Boot Loop: The computer shuts down and automatically reboots, only to shut down halfway through the boot process to begin booting up again, and cycling through this process until manually powered off by the user and forced to hard reboot. The computer continues to behave badly on a roll of 1-2 on a 1D6 after the forced reboot, otherwise it works properly.
4-5	Impaired Performance: The computer works, but imposes a -2 penalty to any Skill Rolls made using the computer until the computer is shut down and rebooted properly.
6-8	Reduced Response: The computer works, but behaves sluggishly (the computer's Interface Bonus is reduced by 2 until shut down and rebooted properly).
9-10	No Response: The computer fails to do anything this Phase, roll 1D6 on each of the following Phases until the computer is shut down and rebooted properly (on a result of 1-2, the computer continues to do nothing).
11	Crash!: The computer seizes up and will not respond until rebooted, brings up an error message (usually accompanied by a blue or black screen) and will not respond until rebooted or just automatically reboots. In any case, the forced reboot may cause the computer to continue to behave badly on a roll of 1-2 on a 1D6 the next time the computer is booted.
12	Corrupted OS: The computer's OS has become damaged and unusable. The user can attempt a Heroic (Base DV 12) <i>Computers Roll</i> to repair the OS, otherwise the OS must be reinstalled (requiring at least an hour).

COMPUTERS & HACKING: COMPUTERS & HACKING: HARDWARE

COMPUTERS

TYPE	WEIGHT (KG)	COST (OP)	TL
Computer, AI Megacomputer	5,000	500,000*	6
Computer, Desktop	8	10*	5
Computer, Mobile	2	15*	5
Computer, Pocket	0.5	3*	5
Computer, Supercomputer	1,000	5,000*	5

ACCESSORIES & UPGRADES

TYPE	WEIGHT (KG)	COST (OP)	TL
Computer Peripherals	0.5-3	0.1-2.0*	5
Computer Upgrade, Combat	×1.5*	0.8	5
Computer Upgrade, Direct Neural Interface†	—	×1.4*	6
Computer Upgrade, Increased RS	—	50	5
Computer Upgrade, Increased Skill Level*	—	1 per*	5
Computer Upgrade, Increased SU	—	0.5 per*	5
Computer Upgrade, Increased IB	—	10 per*	5
Datacard (10-pack), Blank	—	0.5	4
Datacard, Game	—	0.35	4
Datacard, Movie/ Video	—	0.25	4
Datacard, Music/ Audio	—	0.15	4
Direct Neural Interface Headset†	0.5	2	6
Power Cells (5-pack)	—	0.5	4

COMPUTER CHARACTERISTICS

Computers are rated in terms of their Power (or POW), an abstract representation of a computer's performance output. Using modern analogies, this generally entails clock speed, cache size, bus speed, RAM size, overall data throughput and data storage size. POW functions effectively like INT—it's a computer's only Primary Characteristic, and is also used to represent its Skill level for any tasks it performs (thus a computer uses its POW ×2 + die roll when performing Skills).

(continued on next page)

upgraded to POW 18 or higher) pre-programmed Skills at level 4, and feature external data drives with 160 SU (200, if upgraded to POW 15-17, 240 SU if upgraded to POW 18-20, or 280 SU if upgraded to POW 21), a network connection, and remote terminals with their own datacard drives, displays, audio and input devices. It costs +9.2 OP to upgrade to POW 13, +18.8 OP to upgrade to POW 14, +28.7 OP to upgrade to POW 15, +39 OP to upgrade to POW 16, +49.7 OP to upgrade to POW 17, +85.5 OP to upgrade to POW 18, +99.5 OP to upgrade to POW 19, +114 OP to upgrade to POW 20, or +129 OP to upgrade to POW 21.

Computer; Desktop: Desktops are non-mobile, personal computer workstations common amongst students, home users and businesses. These computers have a POW Characteristic of 5 (see sidebar), and feature an internal data drive with 40 SU (or 80 SU, if upgraded to POW 6 or 7), a datacard drive, a network connection, and external display, audio and input devices (though integrated units are not uncommon). It costs +2.5 OP to upgrade to POW 6, or +5 OP to upgrade to POW 7.

Computer; Mobile: A portable computer roughly the size of a standard notebook (such as a laptop or tablet) that may be carried in a briefcase or backpack. Laptops have a POW Characteristic of 4 (see sidebar), and feature an internal data drive with 20 SU (or 30 SU, if upgraded to POW 6), a datacard drive, a network connection, and integrated display, audio and input devices. Uses a rechargeable power cell with a battery life of 5 continuous hours of use or 5 days on standby mode, and requires an hour to recharge from a standard electrical outlet. It costs +2.5 OP to upgrade to POW 5, or +5 OP to upgrade to POW 6.

Computer; Pocket Computer: Pocket computers are handheld, portable computers smaller than the size of a paperback novel and, as their name implies, may easily be stowed in a pocket. They typically have a secondary function, such as being a mobile phone, dedicated GPS device, etc. These small wonders have a POW Characteristic of 1 (see sidebar), and feature an internal data drive with 10 SU, a datacard drive, a network connection, and integrated display, audio and input device. Uses a rechargeable power cell with a battery life of 5 continuous hours of use or 5 days on standby mode, and requires an hour to recharge from a standard electrical outlet. It costs +2.5 OP to upgrade to POW 2, or +5 OP to upgrade to POW 3.

Computer; Supercomputer: Primarily used by business firms, scientific research institutes, government agencies and military think tanks—supercomputers are room-filling, multiuser computers used to process vast amounts of data, perform high-volume calculations or serve as central repositories. These massive computers have a POW Characteristic of 8 (see sidebar), and feature external data drives with 80 SU (or 120 SU if upgraded to POW 9, 10, or 11), a network connection, and multiple remote terminals with their own datacard drives, displays, audio and input devices. It costs +2.5 OP to upgrade to POW 9, +5 OP to upgrade to POW 10, or +7.5 OP to upgrade to POW 11.

ACCESSORIES & UPGRADES

As well as the base unit, there are many add-on, upgrades and accessories that can be purchased for a computer—removable storage devices, printers, additional monitors, performance upgrades, scanners, etc. Most of these add or increase functionality to computer beyond the base computer's initial capabilities. **Note:** Items options marked with a dagger [†] are intended for use in campaigns featuring Virtual Reality Nets where users connect to computers using cybernetics or other neural interface units, and may not be applicable in campaigns featuring more conventional computers.

Computer Peripherals: This includes any of the typical computer add-ons, such as printers, scanners, external data drives, microphones, webcams, monitors, external speakers, gamepads, etc. Dedicated mobile peripherals usually cost 20% more than standard, non-mobile versions, but are also smaller and 25% lighter.

Computer Upgrade, Combat: Primarily used by combat personnel on the battlefield, this upgrade provides a mobile or pocket computer with shock absorption, EMP hardening, water and dust proofing, and a non-conductive, armored case (20 KD), allowing the computer to take tumbles and spills it would not otherwise survive. This upgrade increases the computer's weight by +50%.

Computer Upgrade, Direct Neural Interface (DNI)†: This conversion can be added to a computer, and allows it to be linked into a cybernetic neural processor, DNI headset, or helmet that features an integrated DNI system. Adds +2 to any Skill Rolls made with the computer. This upgrade option increases the computer's cost by 40%.

Computer Upgrade, Increased Resources: This upgrade doubles the size of the computer's Resources, allowing it to run more programs simultaneously.

Computer Upgrade, Increased Skill Levels: This upgrade increases the level of one of the AI's Skills by +1 up to , a total of level 10. Note: This upgrade can only be purchased for AI megacomputers.

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Computer Upgrade, Increased Storage Units: This upgrade increases the size of the computer's fixed storage, increasing its Storage Units by +10, up to double the computer's initial SU (based on its POW).

Computer Upgrade, Increased Interface Bonus: This upgrade increases the speed and responsiveness of the computer, boosting its Interface Bonus by +1 level, up to a maximum total of 5 IB.

Datacard: Generic media storage device. In modern settings these come in many formats: CD, DVD, BD, SD card, etc. In futuristic settings they could be holochips, data-crystals, or whatever. In game terms we cheat and just treat them the same. Datacards come blank or prerecorded with your favorite media:

- *Blank:* A blank datacard can hold up to 1 SU (approximately 15 hours of audio content, 3 hours of video content, or roughly 4,500 pictures/documents). Sold in packs of 10.
- *Game:* Prerecorded datacard; contains a video game.
- *Movie/Video:* Prerecorded datacard; contains a blockbuster movie, TV show episodes, etc.
- *Music/Audio:* Prerecorded datacard; contains a music album, audio book, etc.

Direct Neural Interface: This apparatus features a headband with a series of electrodes that tap into your neural system and a processor that converts your neural impulses into commands, allowing you to control DNI upgraded computers mentally. Versions of this can also be found integrated into helmets and other headgear. Uses a rechargeable power cell.

Power Cells: Power cells are rechargeable batteries (or their futuristic equivalents), used to power most small devices (and some weapons). Each power cell has a battery life of 10 continuous hours of use, and requires 1 hour to recharge from a standard electrical outlet. Non-rechargeable power cells cost half as much. Sold in packs of 5.

SOFTWARE

The following is a list of common programs that may be available in your campaign. This list is not meant to be comprehensive, but should provide several examples for creating your own programs (see *Programming 101*). **Note:** Programs marked with a dagger (†) are designed for campaigns using Direct Neural Interface devices and/or virtual reality.

19TH NERVOUS BREAKDOWN†

[Major Anti-Personnel]

Rank: 3; **Resource Size:** 4; **Base DV:** 17; **Cost:** 42.5 OP

19th Nervous Breakdown attempts to induce synaptic overload via repeated bursts of electrical impulses directly to the defender's brain. Making an attack requires a successful *Hacking* Roll (with a +3 to the roll) against the Defender's *Computers* Roll, a successful attack inflicts 3D6 Killing Damage, ignoring the defender's KD completely (only Mental Defense provides any defense against this damage). If the defender's Hits are reduced to 0 or below, the defender is reduced to a mindless, gibbering mess. At twice the defender's BODY below 0, the defender is put into a permanent coma. **Note:** This program is completely useless against computer users using a conventional, non-neural, interface.

ACTIVE CAMOUFLAGE

[Stealth (Detection)]

Rank: 3; **Resource Size:** 2; **Base DV:** 11; **Cost:** 3.3 OP

This program masks your connection on an infiltrated system, making it appear as if you're not actually logged on (+3 to *Hacking* Rolls made to avoid detection).

AUDIOSYNTHESIS

[Utility (sound editor)]

Rank: 6; **Resource Size:** 2; **Base DV:** 10; **Cost:** 1 OP

Audiosynthesis is a powerful suite of music recording, editing, and producing software used by the professionals. Grants a +3 bonus to all music related *Compose* and *Perform* Rolls made while using this program to create and record music.

COMPUTER CHARACTERISTICS [CONT.]

Additionally, computers have additional traits—these are extrapolated from its POW rating (just like Derived Characteristics):

Firewall (FW): All computer operating systems are assumed to come with a basic firewall—a firewall is a program that defends the computer from remote access by unauthorized personnel and programs. A computer's FW acts in a similar manner as a character's Hits—for each successful assault on the computer by a hacker or intrusive program, the computer's FW rating is reduced by 1. When the computer's Firewall reaches 0 FW, it is no longer able to defend itself and is completely open to hackers and programs. A computer's firewall has an FW equal to its POW.

Interface Bonus (IB): When a computer is used by a character, it grants the character an INT bonus equal to its POW ÷3 (rounded down) when performing tasks involving the computer (hacking, programming, etc.).

Resources (RS): This represents the amount of system resources a computer has available to execute programs. All programs require a number of Resources equal to their Size (or greater) in order to run. Additionally, a computer may multitask, keeping multiple programs in resident memory, if the combined Resource Size of the programs is no larger than the computer's Resources. Computers have 10 Storage Units, plus 10 SU for every 6 POW it has (round down). For example, a POW 5 computer has 10 RS, whereas a POW 9 computer has 20 RS)

Storage Units (SU): This determines how much space a computer has available in its data drive (fixed storage device) for storing programs and data (be it documents, audio files, videos, pictures, etc.). A single Storage Unit can hold up to roughly 3,500 pictures or documents, 17 hours of audio content, or 3 hours of video content. Computers have 40 Storage Units for every 3 POW it has (round down) with a minimum of 20 (at POW 1-2). For instance, a POW 5 computer has 40 SU, whereas a POW 7 computer has 80 SU).

Skills: Unlike normal computers, supercomputers with an AI have actual Skills (instead of using the POW ×2 for Skill Rolls), allowing them to perform tasks that other computers cannot. AI have 5 Skills per 6 POW (for example, a 12 POW AI would have 10 Skills), and each Skill starts at a level of 4 (though they may be upgraded up to level 10). The Skills that an AI may choose from may not require physical activity unless the computer is capable of performing such actions through its network (such as piloting drones remotely, manufacturing pharmaceuticals in an attached automated facility, firing weapons in a security turret, etc.). Some of the most common Skills for AIs are listed below:

Autofire Weapons	Expert (choose)	Pilot (choose)
Compose (choose)	Firearms	Programming
Computers	Gunnery	Research
Craft (choose)	Hacking	Science (choose)
Design (choose)	Heavy Weapons	Security Systems
Drive (choose)	Language (choose)	System Operations
Education	Medicine	
Electronic Warfare	Perform (choose)	

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PROGRAM LIST

- Offensive Programs
 - Anti-Personnel, Major
 - § 19th Nervous Breakdown
 - Anti-Personnel, Minor
 - § Cuffs
 - Anti-Program
 - § Charybdis
 - Anti-System
 - § Chernobyl
 - § Lobotomy
 - Decryption
 - § Decoder Wheel
 - § Rawcopy
 - Disconnection
 - § Dropkick
 - Intrusion
 - § Black Mask
 - § Dig Dug
 - § HEAT
 - § Lumberjack
 - Worm
 - § Flash Flood
 - § Info Freako
- Defensive Programs
 - Detection
 - § AV+
 - § Theseus
 - Protection
 - § Chainmail
 - Security
 - § Paranoia
 - § Walls of Jericho
 - § Zone Fighter
 - Stealth
 - § Active Camouflage
 - § Waldo
- Miscellaneous Programs
 - Bot
 - § Divertwin
 - § Sim
 - Controller
 - § Autofactory
 - § Keycard
 - § Lockdown
 - § Master Blaster
 - § Queen Bee
 - § Secure Guard
 - § Senturion
 - Utility
 - § Audiosynthesis
 - § Boson
 - § Burst
 - § CodePlus
 - § D-Baser
 - § Erasure
 - § Lazarus
 - § Logos
 - § Mash It!
 - § Media Junkie
 - § Money Talks
 - § Picture Perfect
 - § Rapid Remove
 - § Safe Word
 - § Super-Sleuth

AUTOFACtORY

[Controller (robots)]

Rank: 3; Resource Size: 1; Base DV: 7; Cost: 0.7 OP

This program allows a computer (or a character using the computer) to control robotic workers (such as those found in a factory or other manufacturing facility) that are connected to the computer's network. Autofactory also provides a +3 to Skill Rolls (such as *Craft*, *Tech*, etc.) made to perform the robots' function.

AV+

[Detection, Anti-Program]

Rank: 4; Resource Size: 4; Base DV: 30; Cost: 12 OP

AV+ loads into RS at startup, and remains inactive in the background (using only 1 RS until it becomes active) and becoming active only to scan any incoming (e.g., downloaded) files for malicious software, logging the result of each scan. Detecting malware requires it to make a roll using the computer's POW $\times 2$, +4 from its Rank, against a Base DV equal to the malware's (if any) Rank $\times 3$. If AV+ finds suspect files, it will attempt to terminate any running malware from the computer's RS and then delete the file from the system. Terminating a program requires AV+ to make a roll using the computer's POW $\times 2$ +4 against a Base DV equal to the defending program's Rank $\times 3$. Beating the malware's DV by 5 or more will corrupt it and render it safe. AV+ can also be used manually to run a full scan on the entire computer, and scheduled to run a full scan periodically (once a week, once a day, etc.).

BLACK MASK

[Intrusion (infiltration), Stealth (avoid detection)]

Rank: 3; Resource Size: 5; Base DV: 23; Cost: 6.9 OP

Black Mask is a "fire-and-forget" intrusion program, once running it will automatically attempt to infiltrate the targeted computer each Phase until it is successful. As an automated program, it uses your computer's POW $\times 2$ (+3, from its Rank) instead of your *Hacking* Skill (though it may be used manually). Additionally, Black Mask grants a +3 bonus to all *Hacking* Rolls to infiltrate and to avoid detection.

BOSON

[Utility (layout & design)]

Rank: 4; Resource Size: 1; Base DV: 8; Cost: 0.8 OP

This is a graphic design and layout program that allows you to compose and print professional-looking media. Boson grants a +2 bonus to all related *Compose* and *Craft* Rolls made using this program.

BURST

[Utility (data transfer accelerator)]

Rank: 2; Resource Size: 1; Base DV: 6; Cost: 0.6 OP

This program reduces download times by 2D6 Phases (to a minimum of 1D6 Phases).

CHAINMAIL†

[Protection]

Rank: 3; Resource Size: 1; Base DV: 7; Cost: 1.4 OP

This program provides you with 12 MKD (Mental Killing Defense) against Anti-Personnel programs and similar online threats. **Note:** This module is only useful for users that are connected via a DNI.

CHARPBOTS

[Anti-Program]

Rank: 3; Resource Size: 3; Base DV: 15; Cost: 6 OP

This program allows you to target programs running on a computer you are connected to and terminate them (from the computer's RS) and delete them. Terminating a program requires you to make

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a. *Hacking* Roll (with a +3 bonus from Charybdis) against a Base DV equal to the defending program's Rank $\times 3$. Beating the DV by 5 or more will corrupt the targeted program, rendering it useless.

Once you have successfully terminated a program, Charybdis will automatically attempt to quick-delete it from the system it is on (denying further use of that program), reducing the actual time required to delete the targeted program by 3D6 Phases (to a minimum of 1D6 Phases).

CHERNOBYL

[Anti-System, Virus, Worm]

Rank: 3; **Resource Size:** 5; **Base DV:** 41; **Cost:** 20.5 OP

As a virus, Chernobyl infects and piggybacks inside another program (and occasionally data files). Using the infected program will also cause Chernobyl to also run. Because of its unique nature, Chernobyl uses either the RS of the infected program its own RS (whichever is larger) to determine how many Resources it takes up. When viewed, Chernobyl appears to be the program that they have infected and require a Detection Roll against a Base DV equal to its Rank $\times 3$ (9, in this case) to determine its true nature.

By causing the computer's various systems to overwork by performing simultaneous intensive operations, Chernobyl causes the computer to dangerously overheat when run. Doing this requires Chernobyl to make a roll using the infected computer's POW $\times 2$, +3, from its Rank, against a Base DV set by the computer's POW $\times 2$. If Lobotomy is successful, it causes the computer's delicate inner workings to become irreparably damaged, necessitating the replacement of the computer's POW. Any success that beats the target DV by 5 or more also results in damaging the computer's storage devices, corrupting any data and programs stored in the computer's SU.

Chernobyl loads a part of itself when the computer boots up, entering into background memory (using only 1 Resource until it becomes active). Because of this, any attempt made to delete Chernobyl from the computer will cause it to replicate on a roll of 5-6 on a 1D6—making 3 copies of itself and consequently infecting other programs.

CODEPLUS

[Utility (compiler)]

Rank: 4; **Resource Size:** 1; **Base DV:** 8; **Cost:** 0.8 OP

This is a program compiler for coding your own programs. Grants a +4 to all *Programming* Roll made while using this compiler.

CUFFS†

[Minor Anti-Personnel, Detection (trace)]

Rank: 3; **Resource Size:** 3; **Base DV:** 27; **Cost:** 13.5 OP

Cuffs causes the defender's brain to become overwhelmed with confused sensory input, potentially incapacitating the defender. Making an attack requires a successful *Hacking* Roll (with a +3 to the roll) against the Defender's *Computers* Roll, a successful attack inflicts 3D6 Stun Damage, ignoring the defender's KD completely (only Mental Defense provides any defense against this damage). If the defender's Stun are reduced to 0 or below, the defender is Knocked Out. Cuffs also attempts to trace the defender back to their physical location, providing a +3 to *Hacking* Rolls to do so, and stores the information for later prosecution. **Note:** This program cannot affect users using a conventional, non-neural, interface other than to trace and log their location.

D-BASER

[Utility (database)]

Rank: 2; **Resource Size:** 1; **Base DV:** 6; **Cost:** 0.6 OP

A robust database program that allows you to store and index data for easy searching and retrieval. The time taken to search for and collate data indexed by this program is reduced by 4D6.

DECODER WHEEL

[Decryption (file encryption)]

Rank: 3; **Resource Size:** 3; **Base DV:** 15; **Cost:** 4.5 OP

This program uses a brute force attack to assess the encrypted password for secure data and programs, allowing you to make a *Hacking* Roll (with a +3 bonus) to crack an encrypted file. Decoder

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Wheel then logs the password for later use, providing immediate access to previously cracked files without needing additional *Hacking* Rolls (unless, of course, the file's password has been changed).

DIG DUG

[Infiltrate (penetrate), Stealth (avoid trace)]

Rank: 4; **Resource Size:** 5; **Base DV:** 32; **Cost:** 9.6 OP

While fairly expensive, Dig Dug serves is a veritable Swiss Army Knife of infiltration proplets. While covering its tracks as a regular system maintenance check (+4 to *Hacking* Rolls made to avoid detection), this program exploits inherent security holes within the target system's operating system (+4 to *Hacking* Rolls made to infiltrate) while also deteriorating the protection of its firewall (reducing the Firewall by 4 points with each successful infiltration attempt).

DIVERTWIN†

[Bot, Intrusion (Infiltration)]

Rank: 4; **Resource Size:** 5; **Base DV:** 23; **Cost:** 9.2 OP

This clever Bot masquerades as a user, attempting to redirect attention to it from the actual user. It does this through performing an infiltration, using its Rank $\times 3$ (12, in this case) plus a die roll in lieu of a *Hacking* Roll, and by performing searches once the defending computer has been infiltrated. A computer can discern the Bot from a user on a roll against Base DV 12 (an opposing user can make a *Perception* Roll to do the same). Once detected as a Bot, the computer (or opposing user) can either ignore it and focus on the actual user instead, or use appropriate countermeasures (such as an Anti-Program program). Savvy hackers sometimes use multiple Divertwins (assuming they have the Resources to spare), each potentially chipping away at the computer's FW, and hopefully diverting attention away from the user.

A Divertwin's avatar can be chosen from dozens of preset options, or can be customized using the presets as a template to diverge from.

DROPKICK

[Disconnection]

Rank: 2; **Resource Size:** 2; **Base DV:** 12; **Cost:** 2.4 OP

By means of this program, you can cause another user to drop their connection to the network. Doing this requires you make a *Hacking* Roll (with a +2 bonus) opposed by the defending user's computers or *Hacking* Roll. Dropkick also accelerates your connection speed, allowing you to react quicker (+4 to your Initiative while running) to other users on the network.

ERASURE

[Utility (deletion)]

Rank: 4; **Resource Size:** 1; **Base DV:** 8; **Cost:** 0.8 OP

Erasure allows you to securely delete data from your computer, making it unrecoverable to data recovery programs. This applet increases the Base DV to 16 (this DV increases by +2 for every full week the data has been deleted), but also increases the time needed to delete data by 2D6 Phases.

FLASH FLOOD

[Worm]

Rank: 2; **Resource Size:** 3; **Base DV:** 14; **Cost:** 5.6 OP

Flash Flood is a worm that, when uploaded onto another system (and each time the system reboots) will load itself into background memory (using only 1 Resource until it becomes active). Every time the system it is on is booted, or Flash Flood is viewed, loaded/quit, used or deleted it will replicate itself, making two copies of itself (when deleted, it may only replicate itself on a roll of 5-6 on a 1D6). While Flash Flood causes no damage to the system itself, it will eventually overrun the system's Resources and SU, causing the computer to shut down.

HEAT

[Infiltrate (penetrate)]

Rank: 3; **Resource Size:** 2; **Base DV:** 11; **Cost:** 3.3 OP

By bombarding a system's firewall, this program locates its weakest areas of protection, and exploits

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them—reducing the overall effectiveness of its protection. When used in conjunction with a successful infiltration attempt, HEAT reduces the defending system's Firewall by 4 points (instead of the normal 1 point).

INFO FREAKO

[Worm]

Rank: 2; **Resource Size:** 4; **Base DV:** 20; **Cost:** 8 OP

Info Freako, when uploaded onto another system (and each time the system reboots) will load itself into background memory (using only 1 Resource until it becomes active), and will intermittently send information (usually either account IDs/passwords, network protocols, system information, log transaction records, specified data entries, etc.) back to the user. Every time Info Freako is deleted, it will attempt to replicate itself, making two copies of itself (on a roll of 5-6 on a 1D6, otherwise it is deleted before it can make copies of itself).

KEYCARD

[Controller (remote computer)]

Rank: 3; **Resource Size:** 3; **Base DV:** 31; **Cost:** 3.1 OP

Once uploaded to a computer, Keycard allows you to access that computer without infiltrating it again, and allows you to control the computer remotely. As a Trojan, Keycard masquerades itself as some other, innocuous program or executable data file. Even a successful roll to detect intrusion against a Base DV 9 will not flag it as unsafe unless the roll beats its DV by 5 or more. Additionally, it loads into background memory automatically at start-up—using only 1 Resource until becoming active (when user logs onto the computer computer).

LAZARUS

[Utility (data recovery)]

Rank: 2; **Resource Size:** 1; **Base DV:** 6; **Cost:** 0.6 OP

This program allows the user to recover recently deleted data. To do so, make a *Computers Roll* (at +2, for the program's Rank) against a Base DV 8 (this DV increases by +2 for every full week the data has been deleted). Recovering data in this manner takes 1D6 Phases for every 10 SU of data to be recovered.

LOBOTOMY

[Anti-System, Trojan]

Rank: 4; **Resource Size:** 4; **Base DV:** 26; **Cost:** 13 OP

Lobotomy is a trojan—it masquerades itself as some other, innocuous program or executable data file. Even a successful roll to detect intrusion will not flag Lobotomy as unsafe unless it beats the trojan's DV by 5 or more.

When Lobotomy is used (typically by the user believing it to be something else) it will display an offensive or insulting message while it simultaneously rewrites the system's master boot record and then causes the system to shut down. Doing this requires Lobotomy to make a roll using the infected computer's POW $\times 2 + 4$, from its Rank, against a Base DV set by the computer's POW $\times 2$. If Lobotomy is successful, it causes the system to be unable to reboot until its data storage has been reformatted and its OS is reinstalled. Any success that beats the Base DV by 5 or more also results in corrupting any data and programs stored in the computer's SU.

LOCKDOWN

[Controller (electronic doors, elevators)]

Rank: 4; **Resource Size:** 1; **Base DV:** 8; **Cost:** 0.8 OP

This program allows a computer (or a character using the computer) to control and override automated doors, elevators, and such that are connected to the computer's network. Lockdown also provides a +4 to Skill Rolls made to oppose attempts using *Pick Locks* or *Hacking* to open, close, or otherwise control connected doors, elevators, etc.

LOCOS

[Utility (word processor)]

Rank: 4; **Resource Size:** 1; **Base DV:** 8; **Cost:** 0.8 OP

A word processor with all the bells and whistles (spell-checking, thesaurus, grammar-checking, etc.). Grants a +2 bonus to *Compose* Rolls for text documents (articles, poetry, etc.) composed with it.

LUMBERJACK

[Intrusion (infiltration), Stealth (avoid trace)]

Rank: 2; **Resource Size:** 4; **Base DV:** 18; **Cost:** 5.4 OP

This little program helps defeat network protocols while masking the location of your network connection by creating a randomized digital address, granting a +2 to *Hacking* Rolls made to log onto a network and to avoid being traced.

MASH IT!

[Utility (archiving)]

Rank: 3; **Resource Size:** 1; **Base DV:** 7; **Cost:** 0.7 OP

Mash It! compresses programs or large collections of data into a single archive file, reducing the amount of SU the target takes up by 3 (to a minimum of 1 SU). It can also be used to extract previously archived data and programs. **Note:** Archived data cannot be viewed or otherwise accessed without this (or similar) program and archived programs cannot be used until extracted.

MASTER BLASTER

[Controller (A/V output)]

Rank: 2; **Resource Size:** 1; **Base DV:** 6; **Cost:** 0.6 OP

Typically used by DJs, movie theaters, and such, this program allows a computer (or a character using the computer) to output audio and/or video to speakers and display devices connected to the computer's network. Master Blaster also provides a +2 to Skill Rolls made to mix and add effects to its A/V output.

MEDIA JUNKIE

[Utility (media player)]

Rank: 3; **Resource Size:** 1; **Base DV:** 7; **Cost:** 0.7 OP

Plays and organizes a variety of different audio and video formats from local files and recorded media to networked streaming broadcasts. Also allows you to rip audio or video files from commercial, prerecorded datacards or record digital a/v data to a datacard.

MONEY TALKS

[Utility (accounting)]

Rank: 6; **Resource Size:** 2; **Base DV:** 10; **Cost:** 1 OP

Manage personal or business finances like a professional accountant. Money Talks provides a +3 bonus to any finance and accounting-based *Education* and *Expert (accounting)* Rolls made with regards to accounts managed with this program.

PARANOIA

[Security (FW buff, skill bonus), Detection (intruders), Anti-Program, Disconnection]

Rank: 4; **Resource Size:** 6; **Base DV:** 52; **Cost:** 20.8 OP

Paranoia is a powerful, anti-intrusion suite that loads into background memory (using only 1 Resource until it becomes active) automatically at start-up, and features increased defense against intrusion (adding +4 to the computer's POW ×2 to resist infiltration), enhanced firewall protection (+4 FW) and comprehensive intrusion detection (+4 to the computer's POW ×2 or a character's *Computers* Roll to detect intrusion). While Paranoia's normally scans for intrusion when an intruder makes a failed infiltration attempt, its detection capabilities can also be manually engaged or scheduled to scan at certain times.

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Once Paranoia has detected an intruder, it will alert the user (if present) and log an entry and will proceed to launch either a built-in anti-virus proget to terminate (requiring a roll using the computer's POW $\times 2$, +4 from its Rank, against a DV equal to the defending program's Rank $\times 3$ —beating the intruding program's DV by 5 or more will corrupt it, rendering it safe) and delete invading programs or auto-kick unauthorized users off the system (requiring a roll using the computer's POW $\times 2$, plus +4 opposed by the defending user's *Computers* or *Hacking* Roll).

PICTURE PERFECT

[Utility (picture editor)]

Rank: 4; **Resource Size:** 1; **Base DV:** 8; **Cost:** 0.8 OP

Edit and manipulate photos, and create digital art from your computer. Grants a +2 bonus to *Craft*, *Photography*, and *Forgery* Rolls for photos and digital art created, edited, or otherwise manipulated with it.

QUEEN BEE

[Controller (vehicles)]

Rank: 4; **Resource Size:** 1; **Base DV:** 8; **Cost:** 0.8 OP

Queen Bee allows a computer (or a character using the computer) to control drones (and normal vehicles equipped with a remote control system) that are connected to the computer's network. This program also provides a +4 to *Pilot*, *Drive*, or *Gunnery* Rolls made while controlling the remote vehicle.

RAPID REMOVE

[Utility (fast delete)]

Rank: 2; **Resource Size:** 1; **Base DV:** 6; **Cost:** 0.6 OP

This program allows you to quickly delete data from a computer, reducing the amount of time taken by 2D6 Phases (to a minimum of 1D6 Phases).

RAWCOPY

[Decryption (copy protection)]

Rank: 2; **Resource Size:** 2; **Base DV:** 10; **Cost:** 3 OP

Rawcopy contains multiple tools for defeating the various methods of copy protection used to secure software and data from illegal distribution. This allows you to make a *Hacking* Roll (with a +2 bonus) to crack the copy protection of an encrypted file.

SAFE WORD

[Utility (data encryption/password protection)]

Rank: 3; **Resource Size:** 2; **Base DV:** 11; **Cost:** 11 OP

Safe Word encrypts data, requiring a secure password to utilize it. Attempting to open, view, edit, etc. the data without the proper password requires a successful *Hacking* Roll against a Base DV 9. Failed attempts are automatically logged in the encryption's metadata.

SECURE GUARD

[Controller (security cameras/feeds/sensors)]

Rank: 2; **Resource Size:** 2; **Base DV:** 12; **Cost:** 1.2 OP

This program allows a computer (or a character using the computer) to control security cameras and microphones connected to the computer's network, and record and archive audio and video footage collected from these sources. Secure Guard can be set to alert security teams to unauthorized personnel during off times or in specific locations. This program also provides a +2 to any Skill Rolls performed using the controlled devices, or to examine the archived footage.

SENTURION

[Controller (remote turrets)]

Rank: 4; **Resource Size:** 1; **Base DV:** 8; **Cost:** 0.8 OP

Senturion allows a computer (or a character using the computer) to control remote weapon turrets connected to the computer's network. This program also provides a +4 to *Gunnery* Rolls made while controlling the remote turret.

Sim+

[Bot]

Rank: 2; **Resource Size:** 1; **Base DV:** 17; **Cost:** 6.8 OP

This program is used to populate virtual reality forums and social media site, making them appear more popular (and populated) than they actually are. A Sim program can interact with others, mimicking a real person by maintaining limited conversations and interaction (though a successful *Perception* Roll against A Base DV 6 will give the Sim away as a Bot). Sims can be set to perform routine tasks, like reporting disruptive or illegal behavior, performing a census of users, alerting users to updates and new content, etc. A Sim uses its Rank $\times 3$ (6, in this case) plus a die roll to perform any Skill Rolls relevant to its tasks.

A Sim's avatar can be chosen from dozens of preset options, or can be customized using the presets as a template to diverge from.

SUPER-SLEUTH

[Utility (search augmentation)]

Rank: 3; **Resource Size:** 1; **Base DV:** 7; **Cost:** 0.7 OP

Super-Sleuth is an advanced search utility that grants the user a +3 to *Research* Rolls when used to search a computer for specific files, or through a file for specific content.

THESEUS

[Trace]

Rank: 3; **Resource Size:** 2; **Base DV:** 11; **Cost:** 2.2 OP

So, you've got an intruder trying to crack your system.... Sure you've got appropriate countermeasures to stop him in his tracks, but the only way to permanently (and legally) solve the problem is to insure the intruder gets arrested. Theseus allows you to track an intruder's connection back to its source (providing a +3 bonus to *Hacking* Rolls made to trace a connection) and log the data so that it may later be handed over to the proper authorities.

WALDO

[Stealth (Trace)]

Rank: 4; **Resource Size:** 2; **Base DV:** 12; **Cost:** 3.6 OP

Waldo is a spoofing program that randomizes your digital address, granting a +4 to *Hacking* Rolls to avoid being traced.

WALLS OF JERICHO

[Security (Firewall)]

Rank: 6; **Resource Size:** 4; **Base DV:** 18; **Cost:** 3.6 OP

This program offers hefty security support in the form of a highly fortified and redundant firewall (+6 to FW!). To ensure protection at all times, Walls of Jericho loads up into background memory automatically at start-up—using only 1 Resource until it becoming active (when an intruder attempts to infiltrate the computer).

ZONE FIGHTER

[Security (Defense)]

Rank: 3; **Resource Size:** 3; **Base DV:** 15; **Cost:** 3 OP

Instead of creating the typical firewall redundancy, Zone Fighter enhances the existing firewall's anti-intrusion capabilities (adding +3 to the computer's POW $\times 2$ to resist infiltration). Additionally, it loads into background memory automatically at start-up—using only 1 Resource until becoming active (when an intruder attempts to infiltrate the computer).

PROGRAMMING 101

While there are a plethora of programs available to choose from for casual users and noobs, the aspiring hacker will want to create his own, unique software. In fact, coding one's own custom apps is something of a rite of passage that separates the hacker from the script kiddies.

CODING NEW PROGRAMS

The first thing involved in creating a new program is to have a concept in mind—what's the program's purpose, how does it perform this purpose, how effective is it, etc. A clear concept can make the rest of the design process extremely simple—if you know what you want the program to do, it's just a matter of choosing the appropriate abilities.

Programs are made up of three constituent parts; Modules, Options, and Rank. Each of these parts has a Difficulty Value modifier attributed to them.

Programs for Virtual Reality & Direct Neural Interface (DNI): Because of their very nature, Virtual Reality and Virtual Nets have their own set of rules and give rise to new breeds of programs. Users commonly connect to Virtual Nets through some sort of direct neural interface (cybernetic, psychic, etc.)—though this may not always be the case. Modules and options marked with a dagger [†] are intended for use in campaigns featuring Virtual Nets and DNI and may not be applicable in campaigns featuring more conventional computers.

MODULES

Programs are composed of one or more modules—a module is a series of code that performs a specific function. Every program must have at least one module, though many programs typically bundle a suite of related modules together to create a flexible software toolkit.

Most modules encompass a range of different uses within its broad spectrum of functionality (for instance, the Security module provides the choice between either increased Firewall or a bonus to Defense Rolls against infiltration). You must choose, when you create the program, which specific function your program uses. If you wish for your program to have two (or more) different uses from the same module, you must select the module multiple times.

Example: Dasha is designing Dig Dug (an infiltration package using the Intrusion and Stealth modules). She wants both the increased FW penetration as well as the bonus to Infiltrate Rolls from Intrusion, however. Each application of the module increases Dig Dug's DV by 8, plus 8 from Stealth for a total of 24 (8 + 8 + 8).

Anti-Personnel, Major [DV 14]: This module attacks and damages users that are connected via a DNI by causing a synaptic overload, deceiving the defender's psyche into believing that physical damage has been taken, burning out brain cells, etc. Attacking a user with a Major Anti-Personnel module requires a *Hacking* Roll opposed by the defender's *Computers* Roll. For each Rank, this module deals 1 DC of Killing Damage directly to the defender (ignoring armor KD). If such damage reduces the defender's Hits to 0 or below, the defender is put into a temporary coma, or some similar effect (until healed above 0 Hits). If reduced to twice the defender's BODY below 0, the program may kill the defender, leave the defender mindless, brain dead or in a coma, erase the defender's memory, replace the defender's personality with an artificial personality, etc. In either case, the effect must be chosen when the program is created. **Note:** Anti-Personnel modules are completely useless against computer users using a conventional, non-neural, interface.

Anti-Personnel, Minor† [DV 12]: A less lethal alternative to Major Anti-Personnel modules, this module is typically used to incapacitate, impair or entrap computer users that are connected via a DNI by many of the same tricks used by Major Anti-Personnel modules. Attacking a user with a Minor Anti-Personnel module requires a *Hacking* Roll opposed by the defender's *Computers* Roll. For each Rank, this module deals 1 DC of Stun Damage directly to the defender (ignoring SD). If the defender's Stun is reduced to zero or below, the program causes a non-lethal and non-permanent effect (chosen when the program is created) such as causing the defender to pass out (as normal), reducing the defender's REF by half, preventing the defender from logging off, etc. This effect lasts until the defender has recovered enough Stun to bring her back to over 0 Stun. **Note:** Anti-Personnel modules are completely useless against computer users using a conventional, non-neural, interface.

Anti-Program [DV 8]: This module allows you to terminate programs running on your computer or on a connected computer. Terminating a program removes the program from the computer's resident memory (necessitating the program to be reloaded in order to be used), and requires a

PROGRAM CREATION SUMMARY

Creating a new program is a simple, step-by-step process. Just use the following recipe:

- A **Decide on a Concept:** Define what the program is supposed to do and how it should behave.
- B **Choose Module(s):** Choose which module or modules fill the role of the program's basic functions and how it aids this function.
- C **Select Options:** Choose the appropriate options, if any.
- D **Decide Rank:** Rank denotes the effectiveness of a program, and is rated from 1-10. Ranks 3-4 are the average, however.
- E **Determine Final Base DV & Size:** Add the DVs from Modules, Options and Rank together. Figure the program's Size.
- F **Determine Cost:** The program's cost is calculated from its Final Base DV. Now you're done.

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Hacking Roll against a Base DV set by the defending program's Rank $\times 3$. Any success that beats the target DV by 5 or more also results in corrupting the program at its source, rendering it completely useless. Each Rank provides a +1 bonus to *Hacking* Rolls to disable and destroy programs.

Anti-System [DV 14]: This module sabotages a computer system either by corrupting its OS or BIOS, or by physically damaging the computer (though overheating, electrical feedback, etc.). Destroying a computer in this manner requires a *Hacking* Roll against a Base DV set by the defending computer's POW $\times 2$. Any success that beats the target DV by 5 or more also results in corrupting any data and programs stored in the computer's SU. Each Rank provides a +1 bonus to the *Hacking* Roll to disable the computer.

Bot† [DV 6]: Programs with the Bot module are typically used to populate Virtual Reality environments as interactive pseudo-AI constructs. However, Bots can also be used to perform tasks independently of the user (though with limited imagination and results) as well as drawing attention away from the user (as they may be mistaken for users, themselves). Bots can speak, perform tasks and use programs—using their Rank $\times 3$ for any task rolls. Each Rank also increases the Base DV (also equal to the Bot's Rank $\times 3$) against *Perception* Rolls to determine that the Bot is merely a program and not an actual user. **Note:** The Bot module does not require the Automation option to act independently.

Controller [DV 4]: This module allows you to control a machine that is directly or remotely connected to the network. The type of machine the module may control must be specified (security cameras, defensive systems, vehicles, electronic doors & elevators, etc.). Controlling a machine takes an Action and requires a *Computers* Roll (in lieu of the Skill normally used to perform the Action) depending on the Action performed. Each Rank provides a +1 bonus to *Computers* Rolls to control the machine in question.

Decryption [DV 8]: This module assists in bypassing and/or removing of either the encryption and password protection or the copy protection of data or software. Each Rank provides a +1 bonus to *Hacking* Rolls to either crack the encryption/password protection or the copy protection of a data file or program.

Detection [DV 4]: This module facilitates either the detection of intruding hackers and programs (and alerts the user or system to their presence) or to attempts to trace a hacker or program to its source. Each Rank provides a +1 bonus to either *Computers* Rolls to detect infiltration or to *Hacking* Rolls to trace the intruder or program.

Disconnection [DV 6]: This module allows you to forcibly log off another user from the local network or system. Kicking another user off a network or system requires either a *Computers* or *Hacking* Roll opposed by the defender's *Hacking* Roll. Each Rank provides a +1 bonus to the roll to disconnect another user.

Intrusion [DV 8]: This module aids attempts to gain quick access to computer systems, by penetrating a computer's firewall faster. Each Rank either reduces an opposing computer's FW by +1 points or provides a +1 bonus to *Hacking* Rolls to either infiltrate a computer or to log onto a network.

Protection† [DV 4]: This module acts as a sort of "virtual armor" against Anti-Personnel programs. Each Rank provides either 4 points of Mental Killing Defense (MKD) or 6 points of Mental Stun Defense (MSD) against Anti-Personnel programs or similar threats. Note: This module is only useful for users that are connected via a DNI.

Security [DV 6]: This module helps defend against intruding hackers and programs, either by creating redundant firewalls or by augmenting the existing firewall's anti-intrusion capabilities. Each Rank either increases the computer's Firewall by +1 points or provides a +1 bonus to the computer's POW $\times 2$ rolls to defend against infiltration.

Stealth [DV 8]: This module either makes a program or user harder to detect or makes a user harder to trace. Each Rank provides a +1 bonus to *Hacking* Rolls to either avoid being detected or to avoid being traced.

Utility [DV 4]: This module covers a varied miscellany of functions, including (but not limited to) data recovery (for deleted or corrupted programs/data), data encryption/password protection/copy protection (to protect your data and programs), search augmentation (either faster or more thorough), data transfer accelerator (for boosting download/upload, copy/move speeds), specialized deletion (either faster or allows no recovery of data), data compression (reduces SU taken by data), everyday applications (word processors, photo editors, media players, etc.) and so on. Each Rank either provides a +1 bonus to an appropriate computer-related Skill Roll (*Computers*, *Hacking*, *Programming*, *Research*, etc.), +0.5 bonus (round total down) to an appropriate non-computer-related Skill Roll (*Design*, *Knowledge*, *Science*, *Tech*, *Compose*, etc.), reduces time to complete long Actions by 1D6 Phase (to a minimum of 1D6 Phase), reduces Size by 1 SU (to a minimum of 1 SU), increases a Base DV 4 for Skill Rolls by 2, etc.

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Worm [DV 6]: This module allows the program to make of multiple copies of itself. The purpose of these copies is either to be uploaded onto other computers (when used in combination with an upload accelerator Utility module), to fill up the infected computer with nothing but copies of an otherwise useless program, to make a concentrated attack against the infected computer (when used in combination with an Anti-System module), etc. Regardless of its intended purpose, Worm programs usually make use of either the Automation or Daemon option. Each Rank allows a program with this module to make one copy of itself (thus a Rank 3 program with the Worm module may make 3 copies of itself).

OPTIONS

Whereas modules define what a program does, options modify how a program performs. These modifications can run the gamut from affecting how bloated the program's code is to how the program interacts with other programs to how it generally behaves in the wild. **Note:** Some options have a negative DV modifier—these options actually make the program easier to write! However, no program's Final Base DV may be less than 1.

Automation [DV 4]: This option either allows a user to instruct the program to perform a task or set of tasks automatically and/or continually without requiring further input from the user or allows the program, once loaded, to perform a limited set of tasks on its own without user input. Typical tasks include “perform function until this result happens,” “perform function A, if result B happens perform function C,” etc. Automation programs use the POW $\times 2$ of the computer they are on, plus its own Rank, rather than the user's Skills, for any task rolls it makes.

Backdoor [DV 6]: Once a program with this option is uploaded onto another computer, it allows a user to access the computer without having to perform an infiltration again. The Backdoor option is usually used in combination with Worm modules and Automation, Daemon and Trojan options.

Brain-Damaged [DV -4]: Programs with this option are prone to random malfunction. The program will malfunction on a roll of 1 on a 1D6 each time the program is loaded and on a Critical Failure when the program is used to perform a task. Roll on the Malfunction table (see sidebar) to determine the effect of the malfunction.

Copy Protection [DV 4]: Programs with this option have an integrated encryption agent that impedes the ability to copy, download or upload it. Any copies made from the original without proper authorization (or a successful Hacking Roll against Base DV set by the protected program's Rank $\times 3$) are useless and will not run.

Cuspy [DV 2 per -1 Size]: Programs with this option require less Resources than would normally be required due to refined and efficient coding. Cuspy reduces the program's final Resource Size by -1 per $+2$ DV, down to half (rounded up) the program's original Resource Size. **Note:** Determine the program's Resource Size before adding the DV for Cuspy.

Daemon [DV 6]: Also known as Terminate-and-Stay-Resident (TSR), programs with this option usually load when the computer boots up and lurk inactive in the background of the computer's resident memory, waiting for a user, another program or the system to perform a certain task or meet a certain condition (a “trigger”) in order to launch its own pre-scripted response. Once the program has performed its response, it will return to the background. Typical triggers are usually either the unauthorized copy/download of the program or tagged data files, unauthorized deletion/destruction of the program or tagged data files, unauthorized viewing/editing tagged data files, use of the program or when the computer boots up. Responses may include any function or task the program is capable of performing (including multiple functions).

In its inactive mode, the program requires only 1 RS—once it is triggered, however, it requires its full Size in Resources (as normal). If the computer does not have sufficient Resources to run the program (e.g., because there are other programs running), the program fails to launch. A program performing an automated response uses the POW $\times 2$ of the computer it is on, rather than the user's Skills, for any task rolls it is required to make.

While a program with the Daemon option may have any number of triggers and responses (within the capacity of the program), each trigger and its response must be specified when the program is written. If the condition involves the program being deleted or destroyed, the Daemon option will successfully perform its response on a roll of 5 or 6 on a 1D6 (a roll of 1-4 indicates the program has been deleted/destroyed before it has the chance to launch its response). The activation of a Daemon program may be overridden by an authorized user or system (normally the program's creator, primary user, etc.).

Typically used in combination with programs with Anti-Program and Worm modules or programs using the Trojan or Virus options.

BRAIN-DAMAGED MALFUNCTIONS

2D6	MALFUNCTION
1	Abort! : The program quits without warning. The user must reload the program (and hope that any work in progress has been saved).
2	Reduced Response : Program works, but behaves sluggishly (reducing the user's Initiative by -2 while using the program).
3	Impaired Performance : Program works, but its Rank is halved (round down).
4	Handicapped Performance : Program works, but its Rank is considered a negative modifier (provides a penalty to Skill Rolls, increases transfer times, et al.)
5	No Response : The program fails to do anything—better luck in the next Phase!
6	Crash! : The computer seizes up and will not respond until rebooted, brings up an error message (usually accompanied by a blue or black screen) and will not respond until rebooted or just automatically reboots. In any case, the forced reboot may cause (on a roll of 1 on a 1D6) the computer's OS to become corrupt or otherwise behave badly the next time the computer is booted.

Free-Range [DV 5]: Programs with this option may traverse freely across a network without being run from a dedicated computer. Free-Range programs utilize low-level intrusion and backdoor subroutines to access negligible amounts of resources and processing power from random unprotected computers throughout the network to keep itself running while not being dependent on any one computer. Because they are independent of both users and computers, Free-Range programs use their Rank $\times 3$ for task resolution. This option must be used in combination with the either the Bot module, or the Automation or Daemon option.

Nitro [DV 1 per +1 Bonus]: Programs with this option function with accelerated performance, effectively increasing the user's Initiative by +1 per 1 DV (to a maximum +5 Initiative bonus) while using the program. Typically used in combination with programs that require the user to react quicker than his opponent.

Rude [DV -2 per +1 Size]: Programs with this option suffer from sloppy, inefficient coding—requiring greater amounts of Resources than a comparable, competently coded program. Rude effectively increases the program's final Size by +1 per -2 DV, up to twice the program's original Size. **Note:** Determine the program's Size before adding the DV rebate for Rude.

Slow-Mo [DV -1 per -1 Penalty]: This option causes a program to act and respond ponderously, effectively decreasing the user's Initiative by -1 per -1 DV (to a maximum -5 Initiative penalty) while using the program.

Snitch [DV 6]: Once a program with this option is uploaded onto another computer, it will send information (usually either account IDs/passwords, network protocols, system information, log transaction records, specified data entries, etc.) back to the user. Typically used in combination with the Automation option and various search and transfer Utility modules.

Trojan [DV 6]: Programs with this option disguise themselves as another, usually innocuous, type of program. When viewed, a Trojan program appears to be the type of program it is disguised as. Even a successful Detection Roll against a Base DV equal to the Trojan's Rank $\times 3$ will normally ignore a Trojan as harmless unless it beats the Trojan's Defense Roll by 5 or more. This option is usually used in combination with Stealth modules and modules with malicious properties with the Automation and/or Daemon option.

Virtual Reality Avatar† [DV 0-5]: In a Virtual Reality environment computer users, AIs, programs and even mundane files usually have a three-dimensional, visual representation called an avatar. Avatars are the VR counterpart to icons, file names and user names that are common on non-VR computer systems.

An avatar may appear as anything the designer can imagine and render—be it a person, creature, mythical being, everyday object, symbol, logo, etc. Regardless, avatars come in three basic levels of quality—Low-Res (archaic video game/computer graphics or low detailed cartoons), High-Res (high-end video game graphics, semi-realistic CGI, or highly detailed cartoon) and Hyper-Realistic (looks like the real thing). In addition, avatars are created either as static entities (no moving parts), or animated objects (with lower quality avatars generally using simple motion loops, while high-end avatars sometimes have a full set of subroutines dedicated to random, contextual and reactionary movement). Programs designed for a virtual environment are assumed to come with the basic static, low-resolution avatar.

- **Low-Res/Static [DV 0]**
- **Low-Res/Animated [DV 1]**
- **High-Res/Static [DV 2]**
- **High-Res/Animated [DV 3]**
- **Hyper-Realistic/Static [DV 4]**
- **Hyper-Realistic/Animated [DV 5]**

Virus [DV 6]: This option allows a program to “infect” and piggyback inside another program (and occasionally data files). Using an infected program will also cause the virus to also run (while the user remains unaware—until the virus’ ill effects begin to show). Because of its unique nature, Virus programs use either the Size of the infected program or Virus program’s Size (whichever is larger) to determine how many Resources it takes up. When viewed, Virus programs appear to be the program that they have infected and require a Detection Roll against a Base DV equal to the Virus’ Rank $\times 3$ to determine their true nature. The Virus option is usually used in combination with Stealth modules and Anti-Personnel, Anti-Program or Anti-System modules with the Automation and/or Daemon option.

Witness [DV 4]: This option allows a program to log information (events, times, program/system/user identification, etc.). Unlike the Snitch option, this information is not sent back to a user, but stored for use by the program itself (though this information may be accessed by the user). The Witness option is usually used in combination with Anti-Personnel, Anti-Program or Detection modules and Automation and/or Free-Range options.

RANK

A program's Rank is a measure of its overall performance level. A program with a high Rank is more capable in performing its functions than a similar program with a lower Rank. Rank is measured from a minimum of one to a maximum of ten. The average program usually has a Rank of three to four, while very few (and extremely rare) programs have Ranks of 8 or greater.

RANK	DV	RANK	DV
1	1	6	6
2	2	7	7
3	3	8	8
4	4	9	9
5	5	10	10

WRITING THE PROGRAM

Now that you've selected the modules and options that make up your killer app and given it its Rank, you must figure how difficult it will be to write and compile its code. Simply add together all the Difficulty Value modifiers from Rank and each of the modules and options you've chosen—the result is the Final Base DV of the program.

Example: *Dasha is attempting to code an infiltration suite that she's dubbed "Dig Dug." Dig Dug exploits holes within a system's security and degrades its firewall protection while camouflaging itself as a regular maintenance routine. Additionally, Dasha's little gem is designed to consume as few of her computer's resources as possible.*

PROPERTY	DV
Intrusion (penetration)	8
Intrusion (infiltration)	8
Stealth (detection)	8
Cuspy (-2 Size)	4
Rank 4	4
FINAL BASE DV:	32

POOLING

Sometimes, you just don't have the mad skillz necessary to code that pièce d'résistance that you've been wanting to unleash upon the world. However, if you've got friends that can code, you just might be okay. Two or more programmers can combine their talents, making the Skill Roll using the highest INT between them and adding each of their Programming Skills.

Example: *Even with an INT of 6, a Programming of 8 and using a Rank 5 compiler on a POW 6 (Interface Bonus +2) computer—a total of 20, plus a die roll, Dasha can't possibly write her Final Base DV 32 Dig Dug (without rolling a Critical Success). Fortunately, she's not tackling this code alone. Enlisting the aid of her friend Priya (INT 7, Programming 6), this dynamic duo can amass a whopping total of: 7 (Priya's INT) + 8 (Dasha's Programming Skill) + 6 (Priya's Programming Skill) + 2 (Computer's IB) + 5 (compiler program's Rank) = 28! Using the Interlock option, they'll still need to roll a 9 or better to successfully write the program. They better enlist some more help!*

HOW BIG IS THE PROGRAM?

A program's Resource Size is figured from its Final DV. Consult the following table to find the program's Final Base Difficulty Value, then read across for its Resource Size.

Example: *Dig Dug has a DV of 28 (the DV for the Cuspy option is ignored when determining a program's Size); this means it will take up 6 Resources. However, it is quite cleverly written (the Cuspy option reduces its Size by -2), giving it a final Size of 5.*

FINAL BASE DV	RESOURCE SIZE	FINAL BASE DV	RESOURCE SIZE
1-8	1	25-28	6
9-12	2	29-32	7
13-16	3	33-36	8
17-20	4	37-40	9
21-24	5	41+	10

How Long Will It Take to Write?

Unfortunately, writing code takes a lot longer than conceptualizing your program—it takes 6 hours of code-grinding for every point of Base DV you've accumulated (how don't you wish you left off those bells and whistles?). The good news... you don't have to do this in a straight run (however tempting that may be) and the time may be divided up between multiple programmers if you've got some backup on board.

Example: With a DV 32, it would take 192 hours of work to program Dig Dug. Dasha and Priya decide to work in eight hour shifts; at this rate, they'll finish in about 24 days. However, they also decide to work at the same time, cutting the time to only 12 days.

How Much Will It Cost?

So, you don't have what it takes to write your own software. Never fear—you can always pay someone else to do the hard work. To determine the base cost of a program in OP, find its modules on the table below and multiply the program's Final DV by the Cost Modifier for its most costly module.

Example: Dig Dug has a 32 Final DV, and Intrusion and Stealth are tied as its most expensive module (Cost Modifier $\times 0.3$). Multiplying 32 by $\times 0.3$, giving Dig Dug a cost of 9.6 OP (or 960 credits on the black market!).

TYPE	COST MODIFIER
Controller, Utility	$\times 0.1$
Detection, Disconnection, Protection, Security	$\times 0.2$
Intrusion, Decryption, Stealth	$\times 0.3$
Anti-Program, Bot, Worm	$\times 0.4$
Anti-System, Minor Anti-Personnel	$\times 0.5$
Major Anti-Personnel	$\times 2.5$